



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
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24 July 2006

FINAL CRUISE INSTRUCTIONS

NOAA Ship: NOAA Ship *McArthur II*

Cruise Number: AR-06-10

SWFSC Cruise Number: 1631

Cruise Dates: 28 July - 07 December 2006

Cruise Title: *Stenella* Abundance Research Project (STAR 2006)

The project is a cetacean and ecosystem assessment survey with two vessels. The activities of the other vessel, NOAA Ship *David Starr Jordan*, are covered under a separate Announcement. SEE SECTION 11.0 FOR THE STAR CRUISE EXCLUDING THE WATERS OF THE MEXICAN EEZ.

Study Area: The eastern tropical Pacific Ocean (ETP).

Itinerary:

28 JUL-EK 60 Calibration

LEG 1: 29 JUL - Depart San Diego, CA

LEG 2: 31 AUG - Depart Honolulu, HI

LEG 3: 05 OCT - Depart Manta, Ecuador

LEG 4: 08 NOV - Depart Manzanillo

26 AUG - Arrive Honolulu, HI

29 SEP - Arrive Manta, Ecuador

03 NOV - Arrive Manzanillo, Mexico

07 DEC - Arrive San Diego, CA/EK 60 Calibration

Tracklines are included at the end of this document in Appendix 1, and waypoints are included in Appendix 2.

Sponsoring Institution: NOAA/NMFS, Southwest Fisheries Science Center (SWFSC)
Protected Resources Division (PRD)

Cruise Description and Objectives

The primary objective of the *Stenella* Abundance Research cruise is to investigate trends in population size of those dolphin stocks most affected by the eastern tropical Pacific tuna purse-seine fishery. This is a multi-year study with previous cruises in 1986-1990, 1998-2000, and 2003 (see the STAR website at <http://swfsc.nmfs.noaa.gov/prd/PROJECTS/star/default.htm> for previous cruise information). The project takes a multidisciplinary approach. Data on cetacean distribution, school size, and school composition are collected to determine abundance. Oceanographic data are collected to characterize habitat and its variation over time. Data on distribution and abundance of seabirds, prey fishes, squids, and marine turtles will further characterize the ecosystem in which these dolphins live. Photographs of dolphin schools taken from a NOAA Twin Otter aircraft will indicate school size and structure. Skin biopsies of cetaceans provide a database for investigations of stock structure and phylogenetic relationships. Photographs document geographic variation in dolphin morphology and pigment patterns and distribution of individual large whales.

Chief Scientist: Dr. Lisa T. Ballance, SWFSC (858) 546-7173, Lisa.Ballance@noaa.gov



PLAN OF OPERATIONS

1.0 CETACEAN RESEARCH

Weather permitting, visual watches will be conducted by observer teams on the flying bridge during all daylight hours (from sunrise to sunset). The Commanding Officer shall ensure that the flying bridge work area is smoke-free at all times when marine mammal observers are on watch.

1.1 Cetacean Survey - A daily watch for cetaceans will be maintained on the flying bridge during daylight hours (approximately 0600 to 1800) by 6 mammal observers. Each observer will work in 2-hour rotations, manning each of the following 3 stations on the flying bridge for 40 minutes: a port side 25x150 binocular station, a center data recorder position, and a starboard 25x150 binocular station. Line-transect survey methods will be used. At the beginning of each day search effort should start on the trackline. NOAA Ship *McArthur II* should travel at 10 knots (through the water) along the designated trackline. While on search effort if the ship's speed through the water should deviate from this by more than two knots, the bridge personnel will notify the mammal team on watch or the Cruise Leader. The bridge personnel will notify the marine mammal team of any course changes.

1.1.1 Logging of Data - A log of observation conditions, watch effort, sightings, and other required information will be entered into a computer, hooked up to the ship's GPS (for course, speed and position information) and SCS (for weather and heading information). If the SCS goes down for any reason, the ship's Electronics Technician must manually restart the WINDACS_MAC event (in addition to the other events). All science computers must be connected to the same ship's GPS and networked to the time server. An "independent observer" may keep a separate watch of animals sighted during the cetacean survey operations to be compared later with the observer team's data.

1.1.2 Breaking Trackline - On sighting a cetacean school or other feature of interest, the Cruise Leader or marine mammal observer team on watch will request that the vessel be maneuvered to approach the school or feature for investigation. As the ship approaches a school, observers will make independent estimates of school size. Biopsy and photographic operations may commence from the bow based on directions from the Cruise Leader or Senior Marine Mammal Observers. In some instances, the Cruise Leader will request the deployment of a small boat for biopsy, photographic, or other operations (see 3.0).

It may occasionally be necessary to divert the ship's course from the established trackline during regular effort due to glare or adverse sea conditions. Under these circumstances, the ship may divert up to 30 degrees from the established course. This deviation may continue until the ship is 10 nautical miles from the trackline, at which point the ship should turn back toward the trackline.

1.1.3 Dive-Interval Studies - Sightings of deep-diving whales will prompt dive-interval studies at the discretion of the Cruise Leader. The collection of dive-interval data is necessary to produce sightability correction factors for those species that spend a considerable amount of time diving. The Cruise Leader or observer team on watch will direct the vessel during these observations.

1.1.4 Resuming Effort - When the observers have completed operations for the sighting, the ship will resume the same course and speed as prior to the sighting. If the pursuit of the sighting has taken the ship more than 10 nautical miles from the trackline, the observers should be notified. The Cruise Leader or Senior Marine Mammal Observers may request that rather than proceeding directly toward the next waypoint, the ship take a heading back toward the trackline.

1.2 Biopsy Sampling - Biopsy samples for genetic analyses of cetaceans will be collected on an opportunistic basis. Necessary permits will be present on the vessel. The animals to be sampled will be either approached by the research vessel during normal survey operations, will approach the vessel on their own, or will be approached by a small boat. Samples will be collected from animals within 10 to 30m of the bow of the vessel using a dart fired from a crossbow or rifle. With the exception of the small boat and safety gear, all necessary equipment will be furnished and deployed by the scientific party.

1.3 Photography - Photographs of cetaceans will be taken on an opportunistic basis. These will be used to study social behavior and movement patterns of identified individuals, and to study geographic variation. Necessary permits will be present on the vessel. The animals to be photographed will be approached by the research vessel during normal survey operations, will approach the vessel on their own, or will be approached by a small boat. With the exception of the small boat and safety gear, all necessary equipment will be furnished by the scientific party.

1.4 Acoustics

1.4.1 Towed Array - A small hydrophone array will be towed during daylight hours to collect data on cetacean vocalizations. The array will be deployed each morning prior to the start of visual observations, and will be retrieved each evening after search effort ends (and whenever increased maneuverability is required). The array will be wound onto a hydraulic-powered winch supplied by the SWFSC. Hookup to a ship-powered hydraulic system will be required. A team of two acoustic technicians will monitor the array, record sounds made by cetaceans, and localize their positions. The team may request that the vessel be turned and visual observers search for acoustically detected cetaceans. During Leg 1, the Cruise Leader will work with the Commanding Officer to assess the maneuvering limits of the ship for this array.

1.4.2 Sonobuoys - Sonobuoys may be deployed periodically from NOAA Ship *McArthur II* or a small boat on an opportunistic basis, at the discretion of the Cruise Leader. With the exception of the small boat and safety gear, the necessary equipment will be supplied and operated by scientific personnel.

1.4.3 Hull Mounted Hydrophone - A hydrophone mounted under the hull of *McArthur II* may be activated by scientific personnel at the discretion of the Cruise Leader for listening to and recording cetacean vocalizations at any time, day or night. All of the necessary equipment will be supplied and operated by scientific personnel.

1.5 Aerial Photogrammetry - During Leg 4, the ship will conduct coordinated operations with a NOAA Twin Otter aircraft operating out of airports along the west coast of Mexico (mainly Acapulco). The ship will be required to deploy and retrieve 50' sections of PVC pipe that will be used to calibrate the radar altimeter on the aircraft. This operation will require approximately one hour, and the pipes will be attended by the ship's small boat at least 100 yards away from the ship. The small boat will drift alongside the pipes and ensure they are straight. Communications between the ship's scientific party and the aircraft will be via Iridium phones at long range and VHF at shorter range. On days with excellent weather (Beaufort 2 and below) the aircraft will fly to the area of the vessel to collect vertical photographs of schools detected from the ship and will also attempt to locate schools in the ship's immediate vicinity. Data from the images will be used to calibrate observer estimates of school size and to estimate calf production for populations sampled. During days of ship/aircraft operations, school size calibration will take precedence over line transect sampling. It is expected that ship/aircraft operations

will last between one and two weeks. The Cruise Leader will coordinate communications with the aircraft and keep the Command and Operations Officer informed of daily operations planning.

1.6 Salvage of Cetaceans - Cetacean body parts may be salvaged on an opportunistic basis at the discretion of the Cruise Leader. This includes whale and dolphin teeth, bones, and carcasses. In the event that this occurs, scientific freezer space will be used to store the body parts. Permits to salvage and import cetacean parts will be present on the vessel. These permits are valid in US territorial waters and on the high seas only. All specimens obtained will be archived at the SWFSC, but may be released on loan to recognized research institutions according to existing guidelines.

2.0 ECOSYSTEM STUDIES

2.1 Oceanography - Oceanographic sampling will be conducted by the Oceanographer and ship's Survey Technician (excluding Leg 1), and other scientists as designated by the Cruise Leader. A chronological record of oceanographic and net tow stations will be kept by the ship (Marine Operations Log) with dates and times in GMT. The ship will provide a printed and electronic copy of the marine operations log (with the cruise Weather Log and SCS data) to the Chief Scientist at the completion of the cruise.

2.1.1 Thermosalinograph Sampling - Ship personnel will provide and maintain a thermosalinograph (TSG), which is calibrated and in working order, for continuous measurement of surface water temperature and salinity. The SCS will serve as the main data collecting system for the TSG. The Oceanographer will provide the ship's Operations Officer and Electronics Technician with detailed SCS acquisition information. The SCS data acquisition will be stopped and restarted weekly by the Electronics Technician so data files can be backed up and checked for errors. All SCS data will be provided to the SWFSC Oceanographer following each leg of the cruise.

2.1.2 Filtering water samples - Concurrent with squid sampling, small samples of particulate organic matter (POM) and zooplankton will be collected by a member of the scientific party as assigned by the Cruise Leader. One hour prior to the evening CTD, seawater will be collected from the ship's thermosalinograph outflow, pre-filtered to remove large particles, and placed in a 10L carboy filtration system. The water will be left to filter from the carboy on to 25mm glass fiber filters for at least three hours. The glass fiber filters will be stored frozen. For zooplankton collection, seawater collected from the sea surface will be poured over a home-made nitex filter and stored frozen.

2.1.3 XBT Drops - There will be three XBT drops per day, at approximately 0900, 1200 and 1500 hours local ship time, or as requested by the Cruise Leader. The XBTs will be provided by the Southwest Fisheries Science Center, and the launcher/computer will be provided by the ship. XBTs will be conducted by one person per drop (by a member of the scientific party). If the vessel is stopped at the scheduled launch time, the drop will be delayed until the ship is underway again. If the vessel will not move within half an hour, the individual performing the drop should be notified and the drop will be delayed or canceled at the discretion of the Cruise Leader.

2.1.4 Surface Water Samples - A surface water sample for chlorophyll *a* analysis and a bucket temperature will be collected at approximately 0900, 1200, 1500, and 1800 hours local ship time daily. These samples will be taken by a member of the scientific party (schedule to be determined).

2.1.5 Argo Buoy deployments - Up to ten Argo buoys will be deployed by scientific

personnel to help fill in the coverage gap in the eastern tropical Pacific Ocean. Argo is a major contributor to the WCRP's Climate Variability and Predictability Experiment (CLIVAR) and to the Global Ocean Data Assimilation Experiment (GODAE). The Argo array is part of the Global Climate Observing System/Global Ocean Observing System GCOS/GOOS.

The times and locations of the deployments will be determined by the Cruise Leader in consultation with the Command. Buoys will be deployed off the stern by a member of the scientific party after notifying the Deck Officer. The buoys will be loaded in San Diego and secured in a weather protected area; they must be stored horizontally at all times.

2.1.6 CTD - The main SeaBird CTD system will be provided, maintained, and operated by the Survey Technician, excluding Leg 1 when CTD operations will be conducted by the scientific party. The collection of CTD data, samples, and their processing will be conducted by the scientific party and Survey Technician (excluding Leg 1). Morning and evening CTDs will be conducted by the Survey Technician. The crew of the vessel will operate all deck equipment and be responsible for the termination (and any necessary reterminations) of the CTD cable pigtail to the conducting cable of the winch. The ship shall provide a complete backup system, consisting of a frame with weights, deck unit, and SeaBird 9/11+CTD with conductivity and temperature sensors (note: the ship does not have a spare firing rosette). All instruments, their spares, and spare parts provided by the ship must be maintained in working order and, if applicable, have current calibrations (within previous 12 months). We will use both the primary and backup conductivity and temperature sensors during our casts; conducting CTD casts with two temperature and salinity sensors provides immediate feedback about the performance of the sensors and the validity of the data. To ensure longevity of the CTD and Bottles, the CTD must be rinsed completely with fresh water after every cast, and the CTD and rosette must then be covered and secured by the oceanographer.

2.1.6.1 Initial CTD Cast for Each Leg - We request an additional CTD cast on the first evening of oceanographic operations for each leg of the cruise. This cast will be used to test the agreement among salinity samples collected from all CTD bottles. For this cast, a maximum depth of 700m is needed; at this depth, all bottles will be fired. The rate of CTD ascent and descent for this cast can be 60m per minute. The oceanographer will need time to take salinity samples from all bottles before the regular CTD cast can be conducted. The total amount of time needed for this cast is expected to be one hour: 30 minutes for the cast, 15 minutes for the sampling, and 15 minutes to prepare the CTD for the regular evening cast.

2.1.6.2 CTD Stations - Weather permitting, two CTD stations will be occupied each night: an evening cast and a pre-dawn CTD. CTD data and seawater samples will be collected using a SeaBird 9/11+CTD with rosette and Niskin bottles fitted with silicone tubing and o-rings (supplied by the scientific party). All casts are to 1000m, with the descent rate at 30m/min for the first 100m of the cast, then 60m/min after that, including the upcast between bottles. Bottle samples will be collected from 12 standard depths on all stations (0, 20, 40, 60, 80, 100, 120, 140, 170, 200, 500, 1000m). Samples for chlorophyll will be collected from all depths $\leq 250\text{m}$ and processed on board. The 265ml chlorophyll samples will be filtered onto GF/F filters, placed in 10ml of 90% acetone, refrigerated for 24 hours, and then analyzed on a Turner Designs model 10AU field fluorometer. Both the Survey Technician and Oceanographer will participate in sample collection and analysis of chlorophyll samples. Salinity samples (from all 12 Niskin bottles) will only be taken from casts where bottle tripping errors are found. Analysis will be done by the oceanographer. Cast times are subject to change since sunrise and sunset will vary during the cruise. Additional CTD stations may be requested by the Cruise Leader in areas of special interest.

2.1.6.3 Pre-dawn cast - The morning cast will begin approximately one and one-half hours prior to sunrise. The exact starting time will be determined the evening before, by the Operations Officer or Deck Officer. The schedule may be modified by the Oceanographer. Samples for chlorophyll will be collected as detailed above.

2.1.6.4 Evening Cast - An evening CTD cast will be conducted no sooner than one hour after sunset. The exact time will be determined by the Deck Officer (by 1800 local ship time that day). Samples for chlorophyll will be collected as detailed above.

2.1.7 Buoys - The ship may be required to approach oceanographic buoys to repair or maintain scientific instruments for the Tropical Atmosphere Ocean (TAO) project. This will occur on an opportunistic basis at the discretion of the Cruise Leader, providing the Commanding Officer concurs that conditions are safe for such operations.

2.2 Prey Fishes and Squids

2.2.1 Acoustic Backscatter - The scientific EK-60 depth sounder will be operated, at 38, 120, and 200 KHz and interfaced to a data acquisition system to estimate micronekton biomass between 0 and 500m. The vessel's Abyss IES-10 Echo sounder may be used at the discretion of the Commanding Officer, but will normally remain off while underway in deep waters. If any of the ship's navigational depth sounders (ES60 or ABYSS) are found to interfere with the EK-60 scientific sounder, the command will inform the Cruise Leader at any time those navigational depth sounders are used. Use of the scientific EK-60 will be continuous or at the discretion of the Cruise Leader.

2.2.2 Net Sampling - Net tows will be conducted by the scientific party as assigned by the Cruise Leader, with the assistance of a winch operator from the vessel. The schedule for these tows may vary by leg and may need to be modified by the Cruise Leader.

2.2.3 Dipnetting - Dipnetting for surface fauna will be conducted by scientific personnel concurrent with the evening CTD station. This station is to begin no sooner than one full hour after sunset and will require one full hour of time to complete. One or more deck lights will be necessary to illuminate the water surface in the area of dipnet sampling. Samples will be preserved, labeled, and stored in the scientific freezer. Surplus samples of any species of fishes, cephalopods, and crustaceans, will be labeled and frozen for the Food-web Isotope Project. Scientists may also collect surface fauna for aquarium tanks on board. All live organisms will be given to the Scripps Aquarium upon return to San Diego.

2.2.4 Collection of Squid – Concurrent with the evening CTD station and dipnetting, cephalopods *Dosidicus gigas* and *Sthenoteuthis oualaniensis* will be collected in the evening using attracting lights and handline jigs. They will be collected along the Pacific coast of Mexico (off the Pacific Coast of the Baja Peninsula, Central Coast, and Gulf of Tehuantepec), Hawaii, Costa Rica Dome, and Ecuador. Jigging will take place nightly in these locations to find areas where both species coexist. Squids will be collected in three to five stations where both species coexist, for each station, up to 15 *D. gigas* and 15 *S. oualaniensis* will be collected. Juvenile squid swimming at the surface may be collected with dip nets. All specimens will be frozen intact as soon as possible and labeled (ship, date, time and latitude and longitude position).

In areas not mentioned above, squids of all species with mantle sizes 35cm or less will be

collected opportunistically during dipnetting, labeled (ship, date, time, position), and frozen whole for the Food-web Isotope project. Two specimens per species per sampling location are sufficient.

2.2.5 Bongo Tow - An oblique Bongo tow (45 minute station time) will be conducted for fifteen minutes immediately following the evening CTD station and dipnetting, to a depth of 200m (wire out 300m on starboard hydro winch). The Bongo has 505 micron mesh on the starboard side, and 333 micron mesh on the port side. The sample from the starboard, metered net will be preserved in formalin or frozen (isotope analysis), labeled, and stored in containers provided by the SWFSC until the vessel returns to San Diego (post-cruise analysis by FRD). Two cod ends will be used on the bongo tow.

2.2.5.1 Samples for Leatherback Turtle Diet Isotope Project and the Inter-American Tropical Tuna Commission Food-web Isotope Project - The contents of the second cod end of the 333 micron mesh bongo tow will be collected, placed in whirl-packs, labeled, and stored frozen for later stable isotope analysis. Samples will be separated twice a week with gelatinous samples specifically stored for the Turtle Diet Isotope Project. J. Seminoff (SWFSC) and R. Olson (IATTC) will provide supplies to label and store these samples.

2.2.6 Manta Tow - A surface manta net tow will be conducted for fifteen minutes immediately following the evening bongo tow and dipnetting. The manta tow is conducted in the dark; hence, the deck lights need to be turned off for the duration of the tow. The net should be deployed from the starboard hydro winch. Samples will be preserved in formalin, labeled, and stored in containers provided by the SWFSC until the vessel returns to San Diego. Estimated completion time for the entire procedure is 30 minutes.

2.2.7 Collection of Fish - Fish will be collected on an opportunistic basis at the discretion of the Cruise Leader. While underway, trolling gear will be used when conditions permit. While stationary, hook-and-line gear will be used. Fish will be measured, sexed, and stomach contents will be examined and recorded by scientific personnel. The stomach with contents intact, a piece of liver, and a core of white muscle will be removed from each fish and stored frozen for the Food-web Isotope Project (R. Olson, IATTC, will provide supplies and instructions). The Cruise Leader will be responsible for the disposition of the catch, in accordance with NOAA Administrative Order 202-735B, dated January 9, 1989. All flyingfish specimens that land on the decks will be collected by the scientific party and frozen. We request that any individual who finds a flyingfish on deck please notify the Cruise Leader.

2.2.8 Collection of Jellyfish samples - Jellyfish and other gelatinous plankton will be collected opportunistically for leatherback turtle dietary studies. Jellyfish will be collected using dip nets, during scheduled bongo and manta tows, opportunistically from the surface, or from the small boat. Jellyfish and gelatinous plankton on the CTD will be collected upon its retrieval. Samples will be frozen for future stable isotope analysis.

2.3 Seabird Research - Weather permitting, visual surveys for seabirds will be conducted by seabird observers from the flying bridge during all daylight hours (sunrise to sunset). The Commanding Officer shall ensure that the flying bridge work area is smoke-free at all times when seabird observers are on watch.

2.3.1 Seabird Survey - Visual surveys of seabirds will be conducted from the flying bridge during daylight hours by two seabird observers. A log of visibility conditions, effort, sightings, and other required information will be entered into a computer interfaced with the ship's GPS (for course, speed, and position information) and SCS (for weather and heading information). All science computers

must be connected to the same ship's GPS. Seabird observers will use both handheld and 25x150 binoculars.

2.3.2 Seabird Colony Censuses - Nesting site surveys may be conducted by the scientific party at locations to be determined by the Cruise Leader. The vessel's small boat(s) may be required for transporting observers to and from nesting sites for ground counts (on foot) of the seabird colonies. Potential islands include: La Plata, Ecuador; Cocos, Costa Rica; and Wenman and Culpepper, Ecuador. Growing feathers (one per bird) may be collected from up to forty individuals from each of several different species on each at the following colonies: La Plata, Ecuador; Malpelo, Colombia; Cocos, Costa Rica; Wenman and Culpepper, Ecuador. All necessary permits will be aboard the vessel.

2.4 Marine Turtle Research - A visual survey for marine turtles will be conducted out by the mammal and seabird observers on the flying bridge during all daylight hours. Data will be recorded in both mammal and seabird databases. Marine turtles will be captured from a small boat on an opportunistic basis at the discretion of the Cruise Leader. Turtles may be measured, weighed, flipper tagged, and a small amount of blood or skin may be collected for genetic and stable isotope analyses, or hormonal studies. All turtles will be subsequently released unharmed. At the discretion of the Cruise Leader, one or more turtles may be fitted with a satellite transmitter and released. The transmitter will be attached to the carapace with fiberglass resin. At the discretion of the Cruise Leader, a stomach lavage may be performed on selected turtles. With the exception of the small boat and safety gear, all necessary equipment will be supplied and operated by the scientific party. All necessary permits will be aboard the vessel.

3.0 SMALL BOAT WORK

A small boat may be necessary for biopsy sampling, photography, seabird collection, island surveys or marine turtle work. Deployment will be requested by the Cruise Leader on an opportunistic basis, possibly multiple times in a single day, providing the Commanding Officer concurs that operating conditions are safe. Unless the Commanding Officer allows otherwise, the small boat will remain within sight and radio contact at all times while deployed. The small boat will return to the ship immediately when recalled by the CO, OOD, or Cruise Leader. With the exception of the small boat and required safety gear, all necessary equipment will be furnished by the scientific party. See Appendix 4 for the Intent to Use Small Boats and Assessment of Risk Memorandum.

4.0 TRANSIT AT NIGHT

When scientific operations are complete for the night, the ship will resume course along the trackline, at a speed determined by the Cruise Leader, until it is necessary to stop for the morning (pre-dawn) CTD station. It is estimated that the ship will need to transit between 50 and 100 nautical miles per night. The Cruise Leader will determine the nightly transit length on a daily basis.

5.0 SCIENTIFIC PERSONNEL

5.1 Chief Scientist - The Chief Scientist is Dr. Lisa T. Ballance, SWFSC, at phone (858) 546-7173. The Cruise Leader is the authorized representative of the Chief Scientist, with all the designated powers and responsibilities of the Chief Scientist.

The Chief Scientist is authorized to alter the scientific portion of this cruise plan with the

concurrence of the Commanding Officer, provided that the proposed changes will not: (1) jeopardize the safety of personnel or the ship, (2) exceed the time allotted for the cruise, (3) result in undue additional expense, or (4) change the general intent of the project.

5.2 Participating Scientists - Please refer to Appendix 3.

5.3 Passports - Each member of the scientific party will have a valid passport for the cruise. All SWFSC personnel will have a government passport and orders for official travel (which includes time on the ship) and a personal passport for recreational travel. All personnel will have a birth certificate (or copy) or picture identification aboard as a backup for the passport, for issuance to and from foreign ports. All scientific personnel will have government identification cards.

5.4 Medical Forms - All scientific personnel will complete a NOAA Health Services Questionnaire (NHSQ) prior to embarking, as per NC Instruction 6000. This form will be routed through MOP Health Services 30 days prior to the cruise and must be approved by MOC-P Medical Office prior to embarkation.

5.5 Medications - Scientific personnel that need prescription medications will ensure that they bring enough for the 4-month long cruise. Those scientific personnel that take over-the-counter medication on a regular basis (such as ibuprofen, aspirin, decongestants, etc.) will ensure they bring adequate supplies for the cruise.

5.6 Conduct Memorandum - All shipboard personnel including crew and embarked scientists will know the NOAA no tolerance policy on the use of illegal drugs and alcohol and sexual harassment located on the MOCDOC website at: <http://205.156.48.106/> (see specifically MOCDOC 11-2003 12 CCL, MOCDOC 11- OMAO 03, MOCDOC 38-1998 05 DJB, and MOCDOC 38-1998 05 JCA). Also see Appendix 5 and 6 for shipboard policies.

6.0 EQUIPMENT

6.1 Supplied by scientific party:

1. Nine 7x50 hand-held binoculars
2. Three 25x150 binoculars and stands
3. One 20x60 hand-held gyro-stabilized binoculars
4. Three observer chairs for flying bridge (one as a spare)
5. Wooden decking for flying bridge
6. Video camera and tapes
7. Two Digital SLR cameras, and 1 35mm camera with lenses, 35mm film
8. Three handheld radios with chargers
9. Laptop computers (2 - 3) for scientific party e-mail use
10. Two desktop computers mounted below decks with CAT5 KVM extension units at CPUs and at remote console units on the flying bridge.
11. Portable GPS component as backup to ship's system
12. Crossbows, rifles, biopsy darts and tips, miscellaneous tools, sample vials and sample preservative (Ethanol, DMSO with MSDS), 1 notebook computer for biopsy data entry, thermal label printer, and laser printer
13. -80 degree freezer for biological samples (approximately 4' long x 2.5' wide x 3.5' high)

14. Turtle capture device and sampling gear
15. Calipers, flipper tags and applicators, scale, and blood collection equipment for turtle research
16. Up to 20 satellite transmitters for turtles (must be stored in freezer)
17. Fiberglass resin, catalyst, cloth and supplies for attaching turtle transmitters
18. Laptop computer (1) and communication box for programming turtle satellite transmitters
19. Telonics handheld receiver (400-465MHZ) for turtle satellite transmitters
20. Automobile tires for holding turtles
21. Small bench top centrifuge for turtle blood
22. Two long-handled dip nets and sample containers
23. Fish box aquarium and aquarium supplies (for outside deck space)
24. Formalin and sodium borate
25. Manta tow frame, net, and net spares only
26. Bongo frame and nets (505um and 333um, including a spare frame and nets)
27. Glass sample containers with lids for net tow samples, pint (22 boxes), quart (2 boxes) and gallon (1 box/4 each)
28. XBT probes (Deep Blue)- # 30 cases to be stored in two fish boxes, oceanographic van and lab spaces
29. Two computers for oceanographic data processing, acoustic EK60 data acquisition, and one spare
30. Fluorometer (TD10AU) and one backup (TD10) for discrete chlorophyll *a* analysis
31. Lab apparatus, logs, and supplies for discrete chlorophyll *a* analysis
32. SBE38, remote temperature sensor (already installed)
33. Chemicals: Acetone, Hydrochloric Acid, and Triton x-100
34. Bucket thermometer holder and thermometer (and 2 spares)
35. Safety (MSDS) and clean up materials for all chemicals
36. Oceanographic data logs and log books
37. Four pallets of sonobuoys (5'x5'x5', 1200 lbs when full)
38. Two sonobuoy receivers
39. DAT recorder and laptop PC for sonobuoys
40. Hydrophone array and directional hydrophone
41. Aluminum hydraulic winch for hydrophone array, 6' x 6' footprint, approx. 1200 lbs.
42. Hansen Coupling Division male LL6-HKP/LL8-HKP ends to quick connect style connectors on 50' hose to hydraulic power supply for acoustic winch
43. Acoustics recording equipment, including: mixer and recording rack, laptop computers (3), Hi-8 tapes, accessory equipment.
44. Permits for specimen collection and foreign research
45. Computer data storage media (diskettes, etc.)
46. Case of printer paper
47. 8 Fish Boxes
48. Up to 10 Argo buoys
49. Ten - 10ft sections of PVC pipe for Twin Otter Aircraft radar altimeter calibration
50. Water filtration equipment and supplies: pressure/vacuum pump; 10L carboy with tabulation, fittings; GF/F filters and holder; graduated container to measure filtered water
51. Plastic bags, vials, labels, recording sheets (Squid Project), measuring tape, 2 Digital Vernier Caliper, 2 digital balances, 1 Scout Pro 400 X 0.1g, 2 Scout Pro 6000 X 1g, and dissecting kit.
52. Handline jigs (6 to 12 different sizes)
53. VHF Radio for flying bridge
54. Iridium phone
55. Sampling jar for Halobates

6.2 Supplied by ship - We request the following systems, technical support, sufficient consumables, back-up units, and on-site spares. All measurement instruments are assumed to have current calibrations and we request that all pertinent calibration information be included in the data package.

1. Two Insulated CAT5 cables running from location site for mammal and seabird CPUs to the flying bridge consoles
2. Power, ship's GPS, ship's SCS connections to mammal and seabird CPUs running the flying bridge consoles, and networked time server.
3. Space inside for CPUs, keyboards, and monitors referred to in item #2
4. Canopy on flying bridge
5. Three handheld radios (as spares)
6. Small boat for biopsy sampling, photography, seabird collection, seabird colony censuses, and marine turtle research
7. Deck lighting for dipnetting
8. Freezer space for water and biological samples (45 cu. ft./standard chest freezer) and biological samples (-80 freezer will be brought aboard and stored in dry lab area)
9. SeaBird 9/11+ CTD system including rosette with Niskin bottles (2.5L, 12 each)
10. Back-up SeaBird CTD frame, frame with weights, and Niskin bottles (any size, 12 each)
11. Oceanographic winch with minimum 1500m of .322" conducting wire, terminated to CTD
12. Hydrographic winch with minimum 400m cable (1/4" to 3/8" dia.) for net tows
13. Bottom depth checking
14. SeaBird thermosalinograph (SBE45) and connection to SCS
15. Connection of SBE38 to SCS (secondary temperature sensor to TSG)
16. Sippican XBT launcher (prefer aft deck location) and connection to SEAS/Sippican software
17. Fume hood (located in aft lab, aft counter, left side)
18. Small refrigerator for chlorophyll samples extraction (aft lab)
19. Storage space on aft deck for 18 boxes of XBTs (in 2 fish boxes 48" x 44" x 30") in two fish boxes and 16 boxes inside the ship (main or aft laboratories)
20. Scientific Computing System (SCS) for data collection
21. Simrad EK60 scientific echo sounder with 38, 120, and 200kHz transducers plus PC with EK60 data logging software and input cables
22. Autosal salinometer (model 8400) to use as spare (must be operation/tested prior to departure)
23. Counter space for SWFSC-supplied oceanographic computers and connections to network
24. Deck space for one manta and two bongo net frames (primary with nets attached and one spare frame)
25. Installation of SWFSC-supplied sonobuoy antenna and coax cable to the dry lab
26. Ship's GPS connection to the dry lab for acoustics computers
27. Exterior storage space for 4 pallets of sonobuoys (see item 42 in the Equipment Supplied by SWFSC section)
28. Space for and installation of winch for hydrophone array
29. Hansen Coupling Division female LL6-HKP/LL8-HKP ends to quick connect style connectors on hose from hydraulic power supply for acoustic winch
30. Marine Operations and Deck Log/Weather Observation sheets, filled out by Deck Officers
31. Designated workspace in plot room for 2 scientists
32. Copy Machine and fax machine
33. Power, LAN line, and water (fresh or salt) to Oceanography van.
34. Network access to a printer for biopsy sampling computer
35. Connection of Micro thermosalinograph to the SBE interface box, including GPS input (append to

- data string with raw temp, conductivity, and calculated salinity)
36. Mustang suits and Personal Floatation Devices
 37. Space for 8 fish boxes

6.3 Installation and Maintenance - Prior to departure from San Diego the Chief Scientist and members of the scientific party may board the vessel, with permission of the Commanding Officer, to test survey equipment and environmental sensors, set up equipment, and assemble equipment and work spaces on flying bridge.

A freezer alarm system purchased by SWFSC will be installed by the ship for the two scientific freezers and one refrigerator. The system will monitor temperature and sound a warning bell on the bridge computer in case of malfunction. The bridge watch must immediately notify the cruise leader if a malfunction occurs.

6.4 Hazardous Materials - The Chief Scientist shall be responsible for complying with MOCDOC 15, Fleet Environmental Compliance #07, Hazardous Material and Hazardous Waste Management Requirements for Visiting Scientists, released July 2002 (<http://205.156.48.106/>). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemicals brought aboard, and a chemical hygiene plan. The amount of hazardous material arriving and leaving the vessel shall be accounted for by the Chief Scientist, and the Chief Scientist will provide the Commanding Officer with a copy of all Material Safety Data Sheets prior to the cruise.

6.5 Scientific Computing System (SCS) - If the SCS goes down for any reason, the ship must manually restart the WINDACS event in addition to the other events.

7.0 DATA RESPONSIBILITIES

7.1 Collection of Data - The Chief Scientist will receive all original data related to the project. The Chief Scientist will in turn furnish the Commanding Officer with a complete inventory listing of all data gathered by the scientific party, detailing types of operations and quantities of data prior to departing the ship. All data gathered by the vessel's personnel that are desired by the Chief Scientist will be released to her, including supplementary data specimens and photos gathered by the scientific crew.

7.2 Dissemination of Data - The Chief Scientist is responsible for the quality assurance, disposition, and archiving of data and specimens collected aboard the ship. The Chief Scientist is also responsible for the dissemination of copies of these data to cruise participants and to any other requesters. The SWFSC cruise report will be submitted according to SWFSC procedures to appropriate persons and groups.

7.3 Request for time server - We request to use the ship's time server that is installed on the network. The time stamps associated with each data set we collect are used to connect it to all other data sets. Consequently, it is critical that all computers collecting scientific data (e.g., the cetacean and seabird computers, SCS computer, and all oceanographic computers) have their times synchronized. Software with written instructions should be supplied.

7.4 Foreign Research Clearance Reports - A request for research clearance in foreign waters has been submitted by SWFSC. The Chief Scientist is responsible for satisfying the post cruise obligations associated with diplomatic clearances to conduct research operations in foreign waters.

7.5 Evaluation Form - The Chief Scientist will complete the Ship Operations Evaluation Form and forward it to the Office of Marine and Aviation Operations. The Commanding Officer will provide this form.

8.0 ADDITIONAL INVESTIGATIONS AND PROJECTS

Ancillary projects are secondary to the objectives of the cruise, should be treated as additional investigations, do not have representation aboard, and are accomplished by the ship's force. Ancillary tasks will be accomplished in accordance with the NOAA Fleet Standing Ancillary Instructions. Any additional work will be conducted so as not to interfere with operations as outlined in these instructions. The Chief Scientist will be responsible for determining the priority of additional work relative to the primary project with approval from the Commanding Officer.

9.0 COMMUNICATIONS

9.1 Radios - The Cruise Leader or designee may request, from the Commanding Officer, the use of radio transceivers aboard the ship to communicate with other vessels and aircraft, if necessary.

SWFSC will supply their own handheld radios for intra-ship communication and communication with the small boats. However, the Cruise Leader may request the use of the ship's handheld radios if the supplied scientific radios should fail.

9.2 Telephone - The Cruise Leader or designee may require access to the ship's INMARSAT or cellular telephone systems with permission from the Commanding Officer. The Commanding Officer will provide the Cruise Leader with a log of all INMARSAT calls made from the ship for SWFSC business at the end of each leg. In accordance with the Communications Reimbursement Policy, SWFSC will pay these charges via a transfer of funds from SWFSC to the ship.

9.3 Electronic Mail - All members of the scientific party will have access to e-mail for communications with persons not aboard the ship. The amount of such communication traffic will be determined by the Chief Scientist. Regular (at least monthly) updates on communication charges will be provided by the ship to the Cruise Leader and Chief Scientist so that they can determine if additional restrictions are needed.

E-mail communication between NOAA Ship *David Starr Jordan* and *McArthur II* is essential and will be assumed to be in working order. Voice communications between scientific personnel on the two ships may be required at the discretion of the Cruise Leader. A regular communication time between the vessels may be requested.

9.4 Facsimile - A working fax machine must be provided by the ship. Permits may not be secured prior to departure and a working fax is necessary to transmit permits and other documents.

9.5 Routine Reports - The Cruise Leader will submit a weekly cruise report, along with time and attendance for the scientific party, to the Survey Coordinator each Thursday during the cruise via e-mail or, if e-mail is not functioning properly, via fax. The Survey Coordinator at SWFSC will be on the distribution list for the ship's noon position reports.

10.0 MISCELLANEOUS

10.1 Pre-cruise Meeting - A pre-cruise meeting between the Chief Scientist (and her staff) and the Commanding Officer (and his staff) was held on July 9th to identify operational requirements (*i.e.* overtime, modifications, repairs, or procurements).

10.2 Underway Meetings - Meetings between the Commanding Officer (and other officers) and the Cruise Leader should occur at the beginning and end of each leg to discuss and solve any problems or changes that may arise. Additional meetings should occur as needed.

10.3 Debrief - A post-cruise debriefing will be held between the Chief Scientist and the Commanding Officer. If serious problems are identified, the Commanding Officer shall notify the Marine Operations Center, Pacific, in the most direct means available. The Chief Scientist shall document identified problems in the Ship Operations Evaluation Form. The debrief time and date will be determined toward the end of the cruise.

10.4 Time and Attendance - Time and attendance will be filled out by the SWFSC Survey Coordinator while the ship is at sea, based on information transmitted by the Cruise Leader to the Survey Coordinator. Scheduled overtime is authorized for Saturdays, Sundays and holidays. Irregular overtime will be authorized by the Cruise Leader as required. SWFSC personnel are authorized per diem at the rate of \$3.50 per day to be paid via a travel voucher at the termination of the cruise. Task Number 2006 30-51-0002-00-00-00-00 D8LAM06-P20 will pay for per diem and overtime for any SWFSC permanent, term, or temporary employees: Cruise Leaders, Marine Mammal and Seabird Observers, and Oceanographers. Regular salary for these personnel will be paid by the CYOP task from which they are normally paid.

Time and attendance for contracted employees will be based upon a pre-determined schedule. If events of the cruise alter the planned schedule, the Cruise Leader will notify the Survey Coordinator, and appropriate changes will be made.

10.5 Navigation - Primary control will be GPS, also dead reckoning based on visual bearings and radar ranges when possible.

10.6 Scientific Spaces - The Cruise Leader shall be responsible for the proper upkeep and cleaning of all spaces assigned to the scientific party, both laboratory and living spaces, throughout the cruise. The Cruise Leader or Chief Scientist will make berthing assignments for scientific personnel on a per-leg basis, with approval of the Commanding Officer.

10.7 United States Fish and Wildlife Service Inspection and Documentation - Upon arrival into San Diego, the ship must declare all samples of biological origin to the USFWS authorities who board the ship. The Cruise Leader on Leg 4 will be responsible for compiling a clean and complete list using the declaration forms in the Cruise Leader Manual. A sample declaration form is provided. The USFWS will conduct an inspection of the ship when docked. No one (officers, crew, or scientists) is allowed to leave the ship until this inspection is completed.

Specimens that must be declared include protected species (cetacean biopsy samples, turtle blood samples, turtle biopsy samples and salvaged protected species or parts thereof), aquarium specimens,

flyingfish, other dipnet specimens, manta samples, bongo tow samples, shells and corals, home packed fish, squids, invertebrates, salvaged birds (including feathers and other avian parts), and other life or parts of life. All specimens must be declared by country of collection.

11.0 STAR 2006 CRUISE EXCLUDING THE WATERS OF THE MEXICAN EEZ – If Mexican research clearance is not obtained, or if it contains conditions that are impossible to meet, no data will be collected in the waters of the Mexican EEZ (see Appendices 1 and 2 for tracklines and waypoints). The port dates and locations will remain unchanged. Other alterations are detailed in sections 11.1 and 11.2.

11.1 Aerial Calibration – There will be no aerial calibration conducted if Mexican research clearance is not obtained.

11.2 Passing Mode - On alternate days during a portion of Leg 4 only, the survey will be conducted in passing mode. While in this mode, the observers will not request any change in course to approach marine mammal sightings, and the ship will simply continue down the trackline. Small boat operations may still be requested (see section 3.0). Each segment of the trackline will first be covered in passing mode and then covered the next day in closing mode. Effort in passing mode will end after 110 nautical miles, about an hour before sunset, in order to backtrack along the transect line at night (see section 4.0).

For further information contact Annette Henry, Survey Coordinator, Southwest Fisheries Science Center, National Marine Fisheries Service, NOAA, 8604 La Jolla Shores Drive, La Jolla, CA 92037; Phone (858) 546-5672. More information about the cruise and project can also be found at the STAR website: <http://swfsc.nmfs.noaa.gov/prd/star/default.htm>

Prepared by: Sarah E. Jackson ^{LTJG} NOAA
LTJG Sarah E. Jackson, NOAA
Assistant Survey Coordinator, SWFSC

Dated: 24 July 2006

J. T. Ballance
Dr. Lisa T. Ballance
Chief Scientist, SWFSC

Dated: 24 July 2006

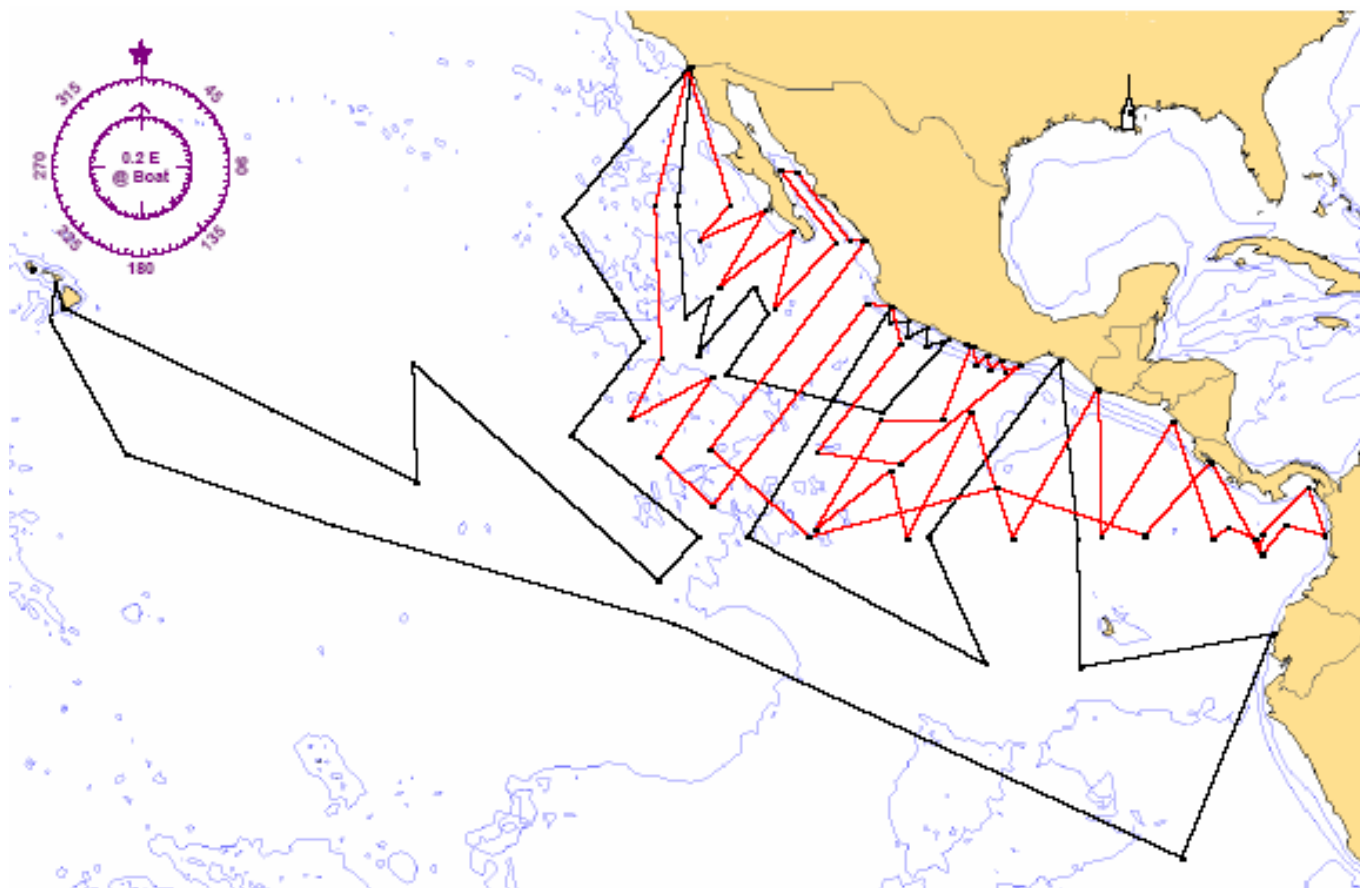
Approved by: W. Fox, Jr.
Dr. William W. Fox, Jr.
Science Director, F/SWR

Dated: 7/25/06

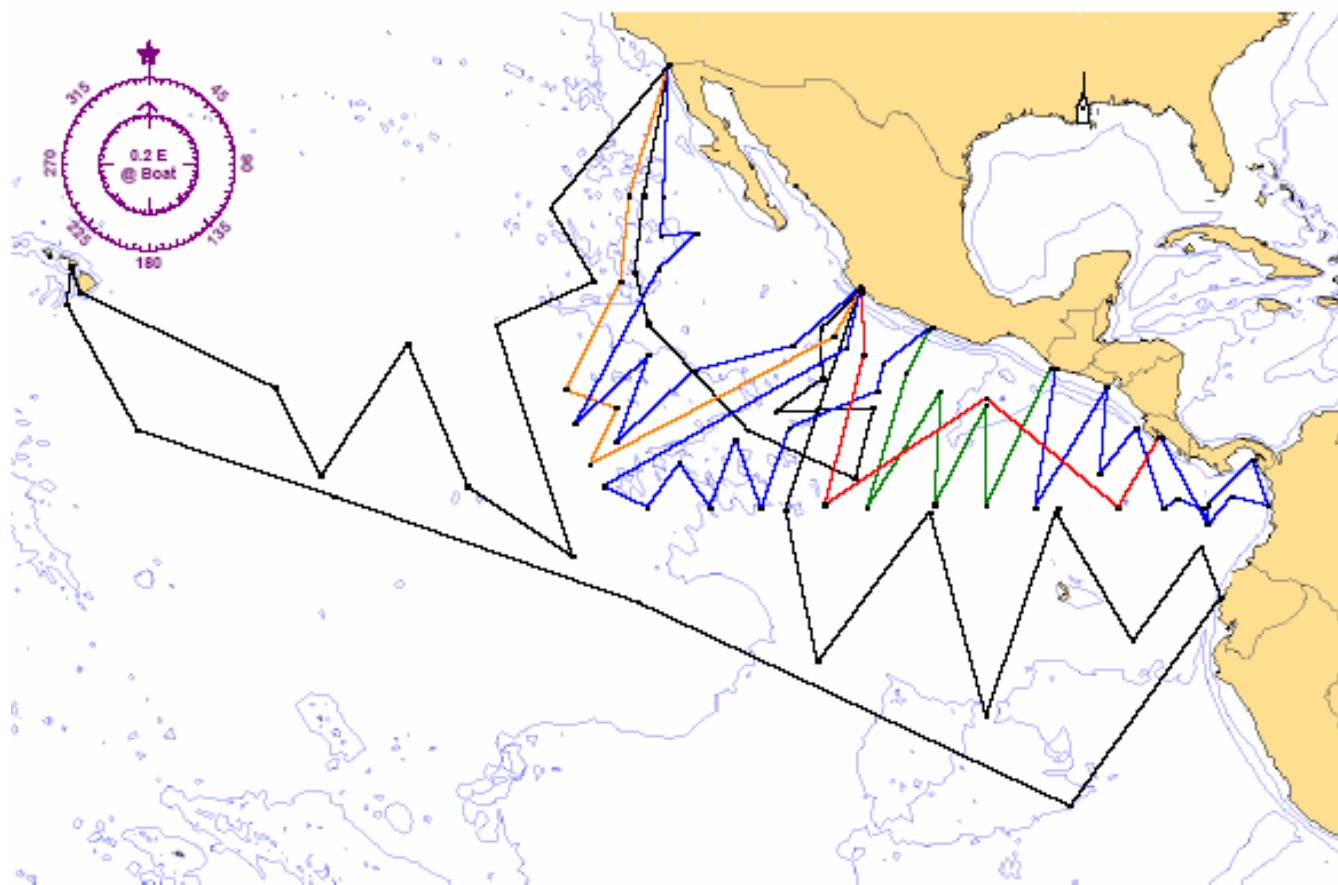
Approved by: Mark P. Ablondi
for Captain Mark P. Ablondi, NOAA
Director Marine Operations Center - Pacific

Dated: 7/25/06

Appendix 1: Tracklines for NOAA ships *David Starr Jordan* and *McArthur II* for a) STAR 2006 and b) STAR 2006 excluding the waters of the Mexican EEZ.



a: Tracklines for NOAA ships *David Starr Jordan* (red) and *McArthur II* (black.).



b: Tracklines for NOAA ships *David Starr Jordan* (colored) and *McArthur II* (black.) excluding the waters of the Mexican EEZ.

Appendix 2: STAR 2006 waypoints for NOAA Ship *McArthur II*. Waypoints are included for both the STAR 2006 Cruise (Table 1) and the STAR 2006 Cruise excluding the waters of the Mexican EEZ (Table 2).

Table 1: STAR 2006 waypoints for NOAA Ship *McArthur II*

Description	Latitude	Longitude
<i>Leg 1: San Diego, CA to Honolulu, HI</i>		
	32 26.289 N	117 14.469 W
	24 13.846 N	124 55.336 W
	19 37.272 N	121 42.415 W
	16 56.938 N	120 01.729 W
	11 24.144 N	124 28.541 W
	05 07.102 N	116 31.598 W
	02 22.028 N	119 01.647 W
	15 44.567 N	134 19.221 W
	08 31.213 N	134 01.232 W
	12 57.280 N	143 04.982 W
	18 59.962 N	155 56.665 W
	20 32.334 N	156 28.908 W
Leg 1 Total Distance		5567 nautical miles
<i>Leg 2: Honolulu, HI to Manta, Ecuador</i>		
	20 34.618 N	156 28.908 W
	18 15.686 N	156 46.682 W
	10 11.736 N	152 08.018 W
	05 48.273 N	139 16.335 W
	00 17.983 S	118 04.486 W
	14 48.962 S	086 34.575 W
	01 00.365 S	080 55.620 W
Leg 2 Total Distance		5785 nautical miles
<i>Leg 3: Manta, Ecuador to Manzanillo, Mexico</i>		
	00 54.329 S	080 49.624 W
	03 02.542 S	092 52.969 W
	05 00.000 N	093 03.381 W
	15 57.627 N	094 08.650 W
	05 05.311 N	102 17.744 W
	02 52.568 S	098 43.387 W
	05 05.311 N	113 29.395 W
	19 06.261 N	104 37.059 W
Leg 3 Total Distance		5207 nautical miles
<i>Leg 4: Manzanillo, Mexico to San Diego, CA</i>		
	19 05.108 N	104 40.697 W
	18 04.973 N	104 41.910 W
	18 16.565 N	103 31.572 W
	17 16.488 N	103 36.327 W
	17 47.855 N	102 19.862 W
	16 45.539 N	102 26.190 W
	17 06.857 N	101 02.343 W
	12 45.011 N	105 09.229 W
	15 00.183 N	114 50.697 W
	18 39.710 N	112 13.043 W

Description	Latitude	Longitude
	20 14.038 N	113 06.403 W
	16 15.393 N	116 34.992 W
	19 45.830 N	115 43.882 W
	18 23.164 N	117 22.824 W
	24 58.015 N	117 49.808 W
	32 28.324 N	116 59.256 W
Leg 4 Total Distance	3220 nautical miles	

Table 2: STAR 2006 waypoints for NOAA Ship *McArthur II* for the STAR Cruise excluding the waters of the Mexican EEZ.

Description	Latitude	Longitude
Leg 1: San Diego, CA to Honolulu, HI		
	32 26.289 N	117 14.469 W
	24 13.846 N	124 55.336 W
	19 41.900 N	121 59.793 W
	16 55.126 N	128 32.705 W
	01 47.418 N	123 27.107 W
	06 29.827 N	130 24.272 W
	15 44.567 N	134 19.221 W
	07 08.614 N	140 01.512 W
	12 57.280 N	143 04.982 W
	18 59.962 N	155 56.665 W
	20 32.334 N	156 28.908 W
Leg 2: Honolulu, HI to Manta, Ecuador		
	20 34.618 N	156 28.908 W
	18 15.686 N	156 46.682 W
	10 11.736 N	152 08.018 W
	05 48.273 N	139 16.335 W
	01 10.805 S	119 14.868 W
	14 36.562 S	090 42.550 W
	01 00.365 S	080 55.620 W
Leg 3: Manta, Ecuador to Manzanillo, Mexico		
	00 54.329 S	080 49.624 W
	02 28.898 N	082 05.944 W
	03 46.913 S	086 35.161 W
	04 47.782 N	091 40.759 W
	08 42.916 S	096 14.827 W
	04 45.349 N	099 57.962 W
	05 12.105 S	107 24.232 W
	04 57.513 N	109 26.713 W
Leg 4: Manzanillo, Mexico to San Diego, CA		
	19 15.447 N	104 22.934 W
	16 39.356 N	107 09.679 W
	13 31.455 N	107 01.190 W

Description	Latitude	Longitude
	11 19.162 N	110 09.157 W
	11 37.104 N	103 41.097 W
	06 56.499 N	104 55.071 W
	10 08.408 N	111 57.087 W
	17 02.128 N	118 28.785 W
	20 18.582 N	119 24.569 W
	24 55.441 N	118 48.188 W
	32 35.513 N	117 09.554 W

Appendix 3: Personnel for the *Stenella* Abundance Research Project 2006 aboard NOAA Ship *McArthur II*.

McArthur II Leg 1: San Diego, CA – Honolulu, HI		
Position	Name	Affiliation
Cruise Leader	Jessica Redfern	SWFSC
Senior Mammal Observer	Richard Rowlett	SWFSC
Senior Mammal Observer	Jim Cotton	SWFSC
Mammal Observer	Suzanne Yin	SWFSC
Mammal Observer	Howard Goldstein	SWFSC
Mammal Observer	Isabel Beasley	AFL
Mammal Observer	Erin LaBrecque	SWFSC
Senior Seabird Observer	Michael Force	AFL
Seabird Observer	Sophie Webb	SWFSC
Senior Acoustician	Shannon Rankin	SWFSC
Acoustic Technician	Elizabeth Zele	AFL
Oceanographer	Melinda Kelley	SWFSC
Teacher-at-sea	Cyndy Martin	Armada

McArthur II Leg 2: Honolulu, HI – Manta, Ecuador via Perú		
Position	Name	Affiliation
Cruise Leader	Lisa Ballance	SWFSC
Senior Mammal Observer	Richard Rowlett	SWFSC
Senior Mammal Observer	Jim Cotton	SWFSC
Mammal Observer	Suzanne Yin	SWFSC
Mammal Observer	Howard Goldstein	SWFSC
Mammal Observer	Isabel Beasley	AFL
Mammal Observer	Erin LaBrecque	SWFSC
Senior Seabird Observer	Michael Force	AFL
Seabird Observer	Sophie Webb	SWFSC
Senior Acoustician	Shannon Rankin	SWFSC
Acoustic Technician	Elizabeth Zele	AFL
Oceanographer	Melinda Kelley	SWFSC
Foreign Observer	I. Garcia-Godos Naveda	Peru
Foreign Observer	Maria Elena Tapia	Ecuador

McArthur II Leg 3: Manta, Ecuador – Manzanillo, México		
Position	Name	Affiliation
Cruise Leader	Jay Barlow	SWFSC
Senior Mammal Observer	Richard Rowlett	SWFSC
Senior Mammal Observer	Jim Cotton	SWFSC
Mammal Observer	Suzanne Yin	SWFSC
Mammal Observer	Howard Goldstein	SWFSC
Mammal Observer	Isabel Beasley	AFL
Mammal Observer	Erin LaBrecque	SWFSC
Senior Seabird Observer	Michael Force	AFL
Seabird Observer	Sophie Webb	SWFSC
Senior Acoustician	Shannon Rankin	SWFSC
Acoustic Technician	Elizabeth Zele	AFL
Oceanographer	Melinda Kelley	SWFSC
Visiting Scientist	Lou Zeidberg	Hopkins Marine Institute
Visiting Scientist	TBD	IATTC

McArthur II Leg 4: Manzanillo, México San Diego, CA		
Position	Name	Affiliation
Cruise Leader	Susan Chivers	SWFSC
Senior Mammal Observer	Richard Rowlett	SWFSC
Senior Mammal Observer	Jim Cotton	SWFSC
Mammal Observer	Suzanne Yin	SWFSC
Mammal Observer	Howard Goldstein	SWFSC
Mammal Observer	Isabel Beasley	AFL
Mammal Observer	Erin LaBrecque	SWFSC
Senior Seabird Observer	Michael Force	AFL
Seabird Observer	Sophie Webb	SWFSC
Senior Acoustician	Shannon Rankin	SWFSC
Acoustic Technician	Elizabeth Zele	AFL
Oceanographer	Melinda Kelley	SWFSC
Visiting Scientist	Sophie Van Parjis	NMFS/NEFSC
Visiting Scientist	TBD	IATTC



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
8604 La Jolla Shores Drive
La Jolla, CA 92037

MEMORANDUM FOR: Commanding Officer, NOAA Ship *McArthur II*

FROM: Sarah E. Jackson, LT JG/NOAA
Assistant Survey Coordinator, SWFSC

THROUGH: Lisa T. Ballance, PhD
Chief Scientist, STAR Cruise 2006

SUBJECT: Statement of intent to use small boats, and assessment of risk for small boat missions during the 2006 *Stenella* Abundance Research Project (STAR) cruise aboard the NOAA Ship *McArthur II*.

Assessment of Risk

In addition to the general risks inherent in all small boat operations at sea, operations for the purposes defined here carry the following specific risks due to the nature of the mission:

- 1) Launch and retrieval
The greatest risks are likely to be during launching and retrieval. To mitigate this risk we are taking extensive time prior to the cruise to drill crew and scientists on safe launching and retrieval techniques.
- 2) Cross-bow/firearm use
Biopsy sampling is done with crossbows and rifle-powered dart guns. Although SWFSC biopsy team personnel are extensively trained in the proper use of this equipment prior to the cruise, the fact that crossbows are in use aboard the boat should be kept in mind by the crew at all times, and should be discussed as a special circumstance during mission briefing.
- 3) Falls within the small boat
Falls are generally caused by an unexpected movement of the boat caused by wave action or by a sudden acceleration or deceleration by the cox'n. To mitigate this risk, we will require the cox'n to notify all occupants prior to a rapid change in course or speed. Prior to accelerating from a stop, the cox'n will ask all occupants if they are ready and will wait for a reply before proceeding. The cox'n will also be responsible for watching for rouge waves and for notifying occupants if the vessel is expected to take a sudden lurch.
- 4) Capture of live animals
Although turtles do not move fast, they are very large and powerful animals. Risk to personnel in the water exists when bringing turtles aboard, both from the turtle and from the small boat. Attention to boat handling is extremely important when working in the proximity of a swimmer. Therefore, competence and experience are essential attributes of the coxswains for these missions.
- 5) Island landings
Potential island landings and departures are required on this expedition for seabird colony censuses. Potential islands include: La Plata, Ecuador; Cocos, Costa Rica; and Wenman and Culpepper,



Ecuador. Landings and departures are not expected to be problematic but the cox'n should exercise due caution in choosing a landing location, timing the waves, and deciding potentially not to land at a requested time.

Appendix 5: Possession or Use of Alcohol or Illegal Drugs

Possession or use of alcohol, illegal drugs, or prescription medications without a prescription, on board any NOAA vessel, by any member of the embarked complement is strictly forbidden and will not be tolerated. When violations of this policy are discovered, the following procedures will be adhered to:

- The alcohol will be confiscated and immediately disposed of in the presence of a witness.
- Drugs will be confiscated and placed in a secured location until the vessel reaches home port or another port of call, at which time the offense will be reported, and the drugs turned over to the appropriate authorities for action.
- Disciplinary or corrective action will be taken in accordance with the applicable Table of Offenses and Penalties.
- Department of Commerce employees will be given information regarding the availability of the Department of Commerce Employees Assistance Program.

Appendix 6: Sexual Harassment

Sexual harassment will not be tolerated aboard NOAA vessels. This applies to all persons, male and female, including members of the operating crew and any embarked scientific personnel or other personnel. Sexual harassment is sex (gender) discrimination that involves unwelcome sexual conduct, which can include both verbal and physical behavior. Some examples of such behavior are: pressure for dates or sex; sexually suggestive looks, comments or gestures; sexual jokes; displaying material of a sexual nature; and deliberate touching. Conduct is unwelcome if it is unsolicited and an individual finds it undesirable and/or offensive. All instances of sexual harassment should be immediately reported to your supervisor, the XO, or the CO.